

## A SOCK

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present innovation relates to a sock.

#### 2. Prior Art

Self-management of health has been particularly recognized as a matter of great concern in recent years, and it has been repeatedly pointed out and reported generally that the feet in particular contribute greatly to the health of the body as a whole.

### SUMMARY OF THE INVENTION

With such current conditions as a background, the present invention focuses on a sock, which is used for long-term covering of the foot on a daily basis.

The object of the present innovation is to provide a novel sock that positively promotes health and contributes to health management, in addition to fulfilling the intrinsic function of a sock as a covering worn beneath shoe.

The above object is accomplished by a unique structure of the present invention for a sock which has a sole covering portion and a foot top covering portion; and in the present invention, particle-form projections made of an elastic composition material consisting of rubber, a soft synthetic resin, etc. are formed on the inside or outside of a part of or the entire surface of the sock.

The particle-form projections can be formed so as to contain one or more of magnetic substances, microbicidal substances and deodorant substances mixed with the elastic composition material.

Furthermore, in the present invention, magnetic particle-form projections made mainly of a magnetic substance mixed with the elastic composition material, microbicidal particle-form projections made mainly of a microbicidal substance mixed with the elastic composition material, and deodorant particle-form projections made mainly of a deodorant substance mixed with the elastic composition material can be provided in sections.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a partially sectional side view of the essential portion of an embodiment of the present innovation;

Figure 2 is a sectional view taken along the lines 2-2 in Figure 1; and

Figure 3 is a partially sectional side view of the essential portion of another embodiment of the present innovation.

## DETAILED DESCRIPTION OF THE INVENTION

Embodiments of the present innovation will be described below with reference to the accompanying drawings.

Figure 1 shows the sock of the present invention that has a common configuration; and this sock 1 is comprised, from the ankle downward, of a sole covering portion 2 and a foot top covering portion 3 and; and it further includes a tubular leg covering portion 4 that covers the ankle upward. The sock 1 can be a short type sock that consists only of a sole covering portion 2 and foot top covering portion 3 from the ankle downward without having a leg covering portion 4 from the ankle upward.

A plurality of particle-form projections 5 made of an elastic composition material consisting of rubber, a soft synthetic resin, etc. are provided (glued by adhesives, for instance) on the inside surface of the sole covering portion 2 of the sock 1. It is more desirable from the standpoint of manifesting an acupressure (shiatsu) effect (described later) that the particle-form projections 5 are disposed on the inside surface of the sole covering portion 2 as shown in Figure 1. However, such particle-form projections 5 that are dottedly provided with spaces in between can be formed on the outside surface of the sole covering portion 2. A considerable effect is obtainable even in the case that the particle-form projections 5 are provided on the outside surface of the sole covering portion 2.

Other than gluing, the projections 5 can be provided on the sock by way of press-fitting vulcanizing particles of rubber, synthetic resins, etc. on the inside and/or outside surface(s) of the sock by a roller printing technique. In this case, part of each projection penetrates into the fibers of the sock and solidifies on the sock, thus being secured on the sock.

It is preferable that each projection is in substantially a dome shape and 1-3 mm high with 2-5 mm in bottom diameter. It is also preferable that the projections 5 are provided with 2-5 mm apart from each other and about 25-100 projections are provided within a 25 cm<sup>2</sup> area.

By adjusting the mixture proportions of the emulsifying agent, ceramic powder, etc. mixed with the elastic composition material, it is possible to endow the particle-form projections 5 with an elastic force that allows the acupressure effect without causing the wearer to experience any pain. As a result, the particle-form projections 5 can cause the uninterrupted manifestation of an acupressure effect to occur by pressing and stimulating pressure points of the sole of the foot of the wearer with each step that the wearer takes.

In the particle-form projections 5 of the shown embodiment, magnetic substances such as magnetized iron oxide, zinc oxide, etc. can be mixed with the elastic composition material that constitutes the material of the particle-form projections 5. Particle-form projections 5 thus formed by mixing a magnetic substance with the material of the projections can promote blood circulation and muscular stimulation to a much greater degree as a result of a magnetic effect that arises from the magnetic substance in addition to the acupressure effect.

In the particle-form projections 5, microbicidal substances such as calcium hydroxide, etc. can be mixed with the elastic composition material that is the material of the particle-form projections 5. Particle-form projections 5 thus formed by mixing a microbicidal substance with the material of the projections is able to maintain the feet in a hygienic state as a result of a microbicidal effect provided by the microbicidal substance in addition to the acupressure effect.

Furthermore, the elastic composition material of the particle-form projections 5 can contain inorganic antimicrobial compounds such as copper phosphate, etc. and/or other deodorant substances. Particle-form projections 5 thus formed by mixing a deodorant substance with the material of the projections can neutralize and suppress unpleasant foot odors as a result of a deodorant effect arising from the deodorant substance in addition to the acupressure effect, so that a pleasant state can be maintained.

In each of the above-described example, magnetic, microbicidal and deodorant substances are respectively or independently mixed as a main additive in the elastic

composition material. However, two or three of such magnetic, microbicial and deodorant substances can be mixed as a combination of substances in the elastic composition material for the particle-form projections 5. In cases where a plurality of different types of substances are thus mixed in combination in the elastic composition material, since the contents of the respective substances in the individual particle-form projections 5 are inevitably reduced; accordingly, there might be a danger that the intrinsic effects of the respective substances are not sufficiently obtained.

In cases where it is desired to cause a plurality (two or three) of the respective effects of such magnetic, microbicial or deodorant substances to act in combination, it is effective (from the standpoint of maintaining the contents of the respective substances in the particle-form projections 5 and of keeping the effects of the respective substances) to install, as shown in Figure 2, magnetic particle-form projections 5a that are produced by mainly a magnetic substance mixed with the elastic composition material, microbicial particle-form projections 5b that are produced by mainly a microbicial substance mixed with the elastic composition material, and deodorant particle-form projections 5c that are produced by mainly a deodorant substance mixed with the elastic composition material, so that these projections 5a, 5b and 5c are appropriately sorted and provided in segments.

In the above embodiment, the particle-form projections 5 are provided on the sole covering portion 2. In the present invention, as seen from Figure 3, such particle-form projections 5 can be provided on the inside and/or outside surface of not only the sole covering portion 2 but also the foot top covering portion 3. Since the particle-form projections 5 used in the embodiment of Figure 3 have a structure substantially the same as the particle-form projections 5 of the previous embodiment, a description of the structure of the particle-form projections 5 of Figure 3 is omitted.

With the structure described above, the present invention possesses several advantages.

First, the particle-form projections perform uninterrupted acupressure by pressing and stimulating respective pressure points of the sole of the foot of the wearer with each step that the wearer takes, so that the sock(s) promotes health and contribute to health management.

Second, the particle-form projections have a magnetic effect, microbicidal effect and/or deodorant effect in addition to the acupressure effect so that the sock(s) can further promote health and also maintain hygiene and maintain comfort, so that a great contribution to health management is made.

In addition, the effective contents of the respective substances among the plurality of magnetic, microbicidal and deodorant substances in the particle-form projections can be very effectively ensured, so that the respective functions of these substances can be manifested.